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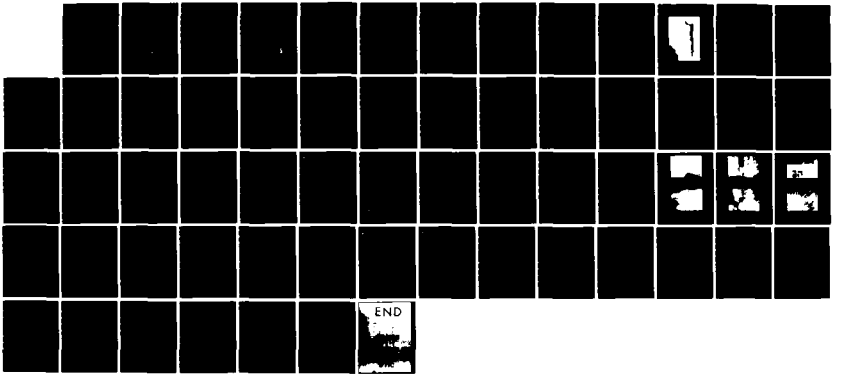

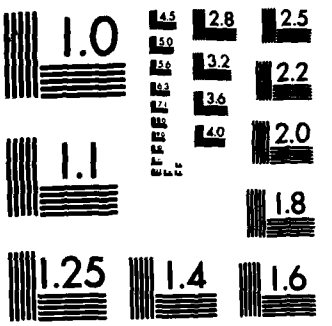

MICROCOPY RESOLUTION TEST CHART
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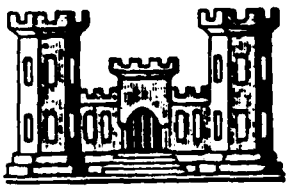
SCANTIC RIVER BASIN
SCITICO, CONNECTICUT

SCITICO DAM
CT 00529

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

APRIL 1980

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,
Scantic River Basin
Scitico, Connecticut

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Scitico Dam is a run-of-the-river composite structure about 76 feet long and 22 feet high. The dam consists of a block masonry structure about 15 feet high capped with a rockfilled timber crib structure. The dam appears to be in fair condition. Scitico Dam has a maximum storage capacity of about 51 acre-feet and a maximum height of about 22 feet. Therefore, the dam is classified in the "Small" size category. The recommended range for the test flood for a "Small" size, "High" hazard dam is from ½ of the PMF to the full PMF.

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SCITICO DAM
CT 00529

SCANTIC RIVER BASIN
SCITICO, CONNECTICUT

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM

Identification No:	CT 00529
Name of Dam:	Scitico Dam
Town:	Enfield
County and State:	Hartford, Connecticut
Stream:	Scantic River
Date of Inspection:	November 14, 1979

BRIEF ASSESSMENT

Scitico Dam is a run-of-the-river composite structure about 76 feet long and 22 feet high. The dam consists of a block masonry structure about 15 feet high capped with a rockfilled timber crib structure. The dam crest, the width of which is not known, is covered with planking. A large mill building, presently used as an industrial laboratory, is adjacent to the right abutment wall of the dam. An abandoned hydropower facility at this site includes a penstock with a gated intake located a few feet to the right of the dam. The masonry section of the dam was constructed about 1890 and the cribbing was added in the late 1920's. The dam currently serves no useful purpose.

The dam appears to be in fair condition. No structural deficiencies were observed which would be indicative of an unsafe dam. However, a partial wash-out of the timber crib occurred in 1955 which suggests that the dam cannot withstand high river discharges. There is no functioning low-level outlet at this site although the hydropower penstock could possibly be used for partial reservoir drawdown.

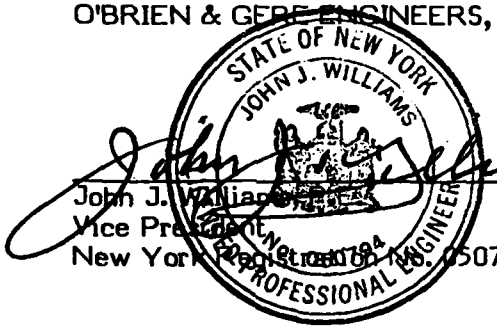
Scitico Dam has a maximum storage capacity of about 51 acre-feet and a maximum height of about 22 feet. Therefore, the dam is classified in the "Small" size category. A large industrial building is located adjacent to the dam. A failure of Scitico Dam could cause flood waters to be directed into this building causing appreciable property damage and the possible loss of more than a few lives. Therefore, the dam is classified in the "High" hazard category. The recommended range for the test flood for a "Small" size, "High" hazard dam is from one-half of the Probable Maximum Flood (PMF) to the full PMF. The selected test flood for this structure is one-half of the PMF.

The test flood peak inflow to Scitico Dam was computed as 19,280 cfs. The routed test flood outflow of 19,070 cfs overtops the right abutment wall by 12.8 feet. The spillway is capable of discharging 3,350 cfs prior to overtopping of the right abutment wall (Elev. 144), which is about 18 percent of the routed test flood outflow.

Within one year after receipt of this Phase 1 inspection report, the Owner, Springbarn Lab Inc., should retain the services of a qualified registered professional engineer, experienced in the design and construction of dams, for the following purposes: 1) perform detailed hydrologic and hydraulic analyses in conjunction with structural stability analyses to assess the ability of the structure to withstand high flood flows; 2) study the suitability of the hydropower facilities as an outlet works and determine if additional outlet works should be provided; and 3) perform a detailed inspection of the dam during dry weather either with a low river discharge flowing over the dam or with the discharge diverted through the hydropower penstock.

In addition, the Owner should implement the following operational and maintenance procedures: 1) the operating condition of the sluice gate for the hydropower facility should be determined and the gate repaired, if necessary; 2) the branches and other debris hanging on the dam crest should be removed; 3) a program of annual technical inspection should be instituted; and 4) the formal surveillance plan, including round-the-clock monitoring during heavy precipitation, should be developed.

O'BRIEN & GERE ENGINEERS, INC.



John J. Williams
Vice President
New York Registration No. 050794

Date 30 April 1980

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of theses guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation: however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Investigation does <u>not</u> include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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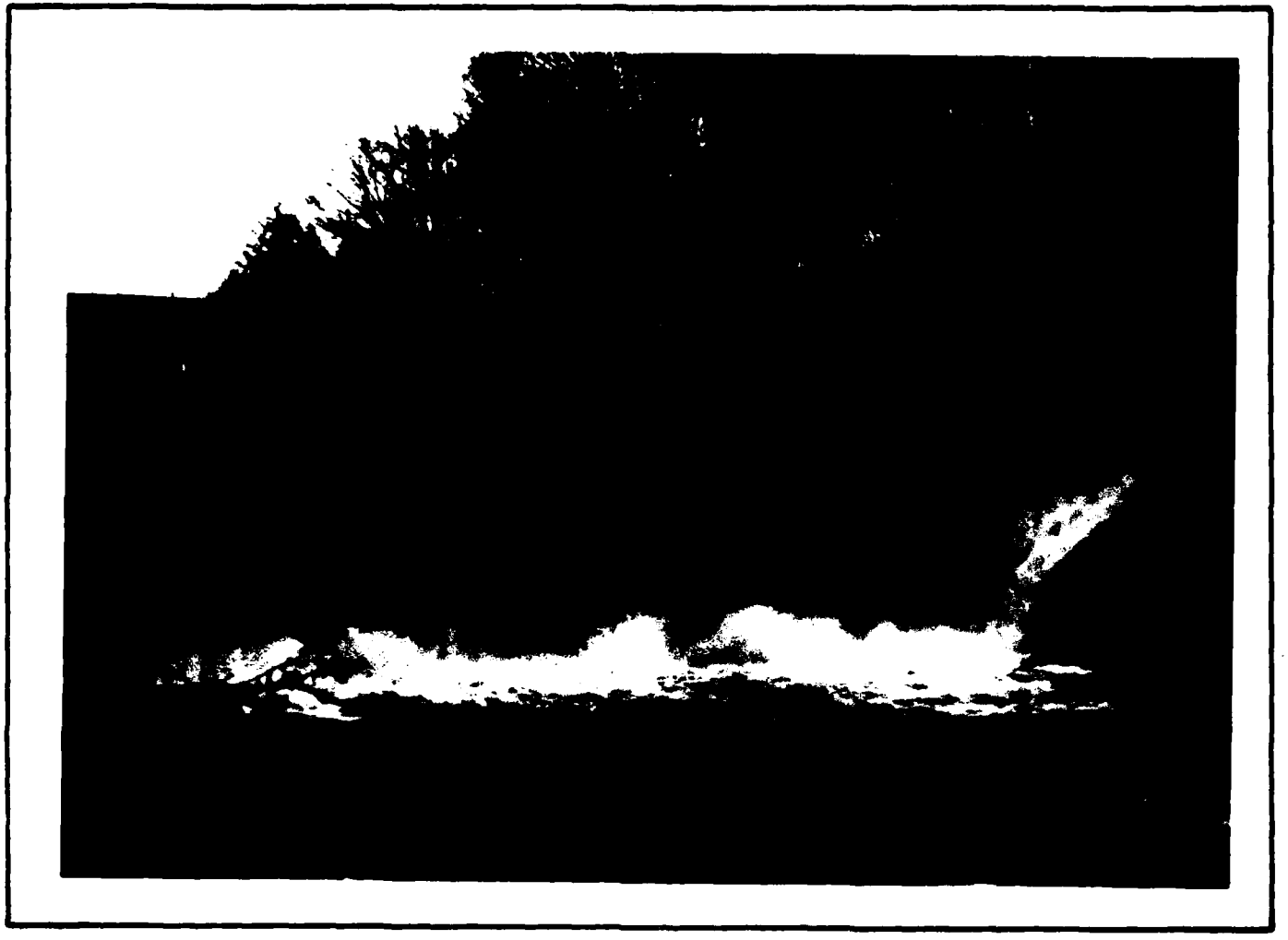

SCITICO DAM AS OBSERVED FROM IMMEDIATELY DOWNSTREAM. (11/14/79)

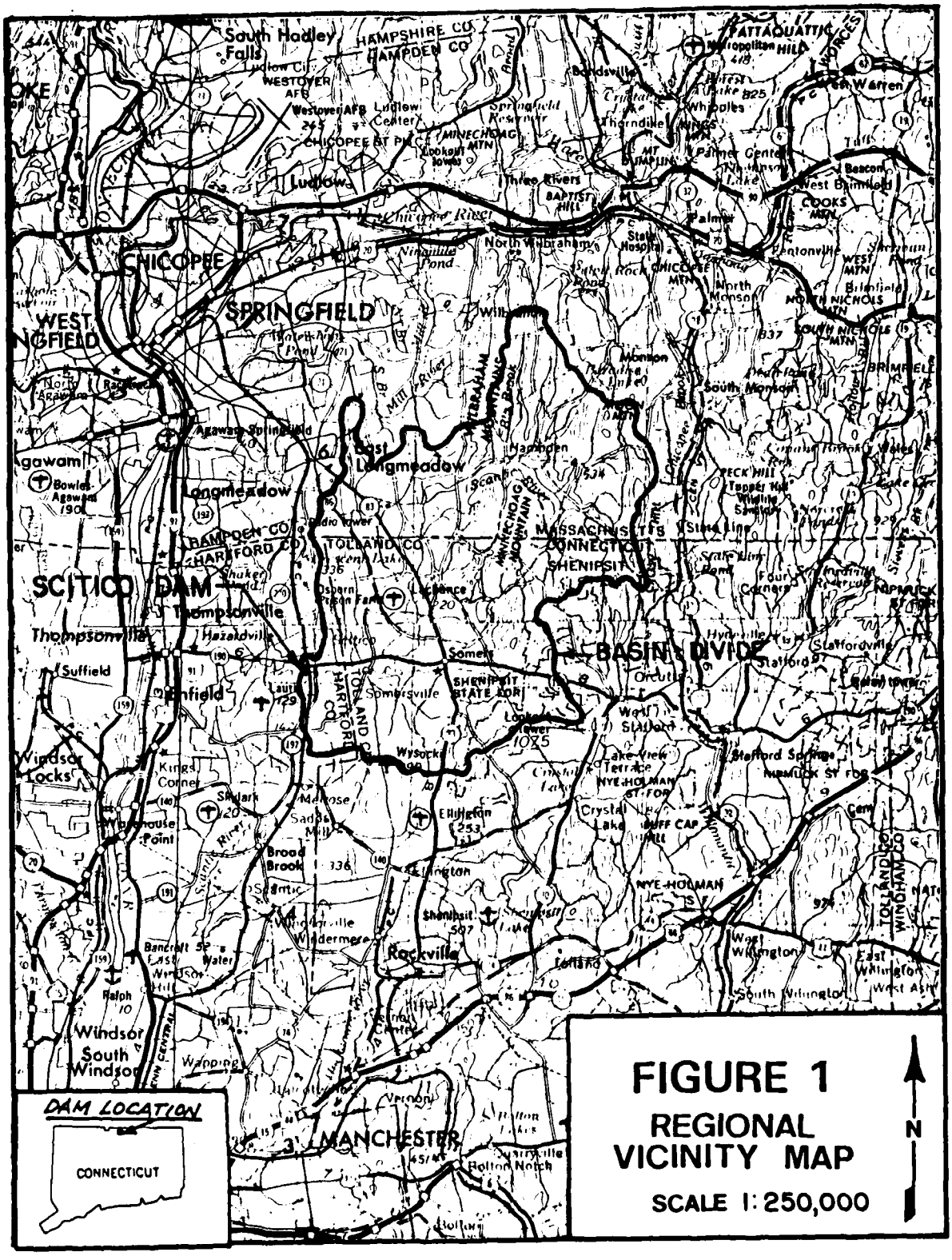

FIGURE 1

REGIONAL VICINITY MAP

SCALE 1: 250,000

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NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT
SCITICO DAM

SECTION 1

PROJECT INFORMATION

1.1 General

a. Authority. Public Law 92-367, passed by Congress on August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate the National Program of Dam Inspections throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. O'Brien & Gere Engineers, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to O'Brien & Gere Engineers, Inc. by a letter from the Corps of Engineers dated November 6, 1979 and signed by Colonel William E. Hodgson, Jr. Contract No. DACW33-80-C-0014 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection. The purpose of performing technical inspection and evaluation of non-federal dams is to:

1. Identify conditions which threaten public safety and make the Owner aware of any deficiencies to permit him to correct them in a timely manner.

2. Encourage and prepare the states to initiate effective dam safety programs for non-federal dams.

3. Update, verify, and complete the National Inventory of Dams.

1.2 Description of Project. (Information for this dam was obtained from the State of Connecticut, Department of Environmental Protection (DEP) and Springborn Lab, Inc.)

a. Location. Scitico Dam is located on the Scantic River in the Town of Enfield, Connecticut. An industrial laboratory located in a mill building adjacent to the right side of the dam is considered to be the major damage center. The Scantic River discharges into the Connecticut River about 11 miles downstream of the damsite. The dam is shown on the USGS Quadrangle entitled "Enfield, Conn." at coordinates N41°58.9', W72°31.1'. A regional location plan of Scitico Dam is enclosed as Figure 1, pg. vi.

b. Description of Dam and Appurtenances. Scitico Dam is a run-of-the-river composite structure about 76 feet long which is slightly arched in the upstream direction. The dam is about 22 feet high and consists of a 15-foot high block masonry base capped with a rock-filled timber crib structure. The dam crest appears to be covered with boards which have about a 5H:1V batter rising to the downstream face of the dam. The horizontal members of the timber cribbing are keyed into brick masonry abutment walls. The left abutment is a nearly vertical rock face rising about 30 feet above the dam crest. The right abutment forms part of the block masonry foundation for the two-story brick industrial building. The top of the abutment wall is about six feet above the dam crest, is tied into the building wall, and is estimated to be about 3.5 feet thick. (Refer to Page B-2).

An eight-foot wide intake structure with a wood gate is located between the right abutment wall and the mill building foundation. The intake is connected to a short 36-inch diameter penstock which conveys water to a small abandoned hydropower turbine equipped with a mechanical power takeoff. The turbine has a vertical draft tube which directs flow into a tailrace downstream of the dam.

c. Size Classification. Scitico Dam has a maximum storage capacity of approximately 51 acre-feet and a maximum height of about 22 feet. The criteria for the "Small" size category includes dams which have between 50 and 1,000 acre-feet of storage capacity and are less than 40 feet high. Scitico Dam is therefore classified as a "Small" size dam.

d. Hazard Classification. Scitico Dam is located adjacent to a large, two-story building currently used as an industrial laboratory. The masonry foundation walls of this building function as river discharge training walls both upstream and downstream of the dam along the right side. It is evident that floodwaters resulting from a failure of Scitico Dam could cause excessive damage to the building and more than a few lives could possibly be lost. The dam is therefore classified as "High" hazard.

e. Ownership. The dam is owned by Springborn Lab Inc., Water Street, Enfield, CT 06082. Telephone: (203) 749-8371.

f. Operator. Mr. Ronald Miller of Springborn Lab Inc. is in charge of the dam and its appurtenances.

g. Purpose of Dam. The dam was constructed originally for industrial hydropower but currently has no useful purpose.

h. Design and Construction History. According to records provided by the DEP, the stone masonry section of Scitico Dam was constructed about 1890. The rockfilled timber crib was added in the late 1920's.

The State records indicate that a portion of the timber cribbing was washed out during the Hurricane Diane flood in August 1955. The damage was inspected by State officials and subsequently the owners contacted a registered professional engineer to design and supervise remedial repairs. The repairs consisted of replacing the washed out section of the timber cribbing, placing anchored reinforced concrete on a portion

of the masonry facing, repairing the crib anchor wall and facing and replacing fill in the cribbing. The work was completed in November 1955 and approved by State officials in April 1956.

i. Normal Operating Procedures. According to the Owner's representative, Mr. Ronald Miller,the sluice gate controlling discharge into the hydropower penstock is always closed. All river discharges are directed over the spillway portion of the dam.

1.3 Pertinent Data

a. Drainage Area. The drainage area for Scitico Dam encompasses approximately 64 square miles to the east-northeast of the site in Hartford and Tolland Counties in Connecticut and Hampden County in Massachusetts. Somersville Pond Dam, which impounds 40-acre Somerville Pond, located about 2.0 miles upstream, has a drainage area of about 60 square miles.

b. Discharge at Damsite.

1) Outlet Works. There is no functioning outlet facility at this site. If repaired, the hydropower penstock possibly could be used for partial reservoir drawdown.

2) Maximum Known Flood at Damsite. No flood records are maintained for the site; however, Hurricane Diane of August 1955 caused extensive damage to the dam. A flow of 15,400 cfs was recorded during August of 1955 at the community of Scitico, located immediately upstream of the dam.

3) Ungated Spillway Capacity at Top of Dam. The spillway capacity with reservoir level at the top of the right abutment wall, Elev. 144.0, is approximately 3,350 cfs.

4) Ungated Spillway Capacity at Test Flood Elevation. The spillway capacity with reservoir at test flood Elev. 156.8 is about 18,600 cfs.

5) Gated Spillway Capacity at Normal Pool. Not applicable.

6) Gated Spillway Capacity at Test Flood Elevation. Not applicable.

7) Total Spillway Capacity at Test Flood Elevation. Same as 4) above.

8) Total Project Discharge at Top of Dam. Same as 3) above.

9) Total Project Discharge at Test Flood. The combined discharge capacity of the flow over and around the dam at test flood Elev. 156.8 is about 19,070 cfs.

c. Elevation.(NGVD)

1. Streambed at Toe of Dam	116.0±
2. Bottom of Cutoff	NA

3. Maximum Tailwater	Unknown
4. Normal Pool	138.0±
5. Full Flood Control Pool	NA
6. Spillway Crest	138.0±
7. Design Surcharge (Original Design)	Unknown
8. Top of Dam	138.0±
9. Test Flood Surcharge	165.2±

d. Reservoir Length. (feet)

1. Normal Pool	3,000
2. Flood Control Pool	NA
3. Spillway Crest Pool	3,000
4. Top of Dam	3,000
5. Test Flood Pool	12,000

e. Storage. (Acre-feet)

1. Normal Pool	51
2. Flood Control Pool	NA
3. Spillway Crest Pool	51
4. Top of Dam	51
5. Test Flood Pool	2,626

f. Reservoir Surface. (Acres)

1. Normal Pool	7
2. Flood Control Pool	NA
3. Spillway Crest	7
4. Top of Dam	7
5. Test Flood Pool	202

g. Dam.

1. Type	Composite block masonry capped with a rock filled timber crib
2. Length	76 feet
3. Height	22 feet
4. Top Width	Unknown
5. Side Slopes (upstream)	Unknown
(downstream)	Vertical
6. Zoning	Unknown
7. Impervious Core	Unknown
8. Cutoff	Unknown
9. Grout Curtain	Unknown

h. Diversion and Regulating Tunnel. Not Applicable

i. Spillway. (The dam is an overflow structure and is not provided with additional spillway capacity.)

1. Type	Broad-crested timber weir
2. Length	76 feet
3. Crest Elevation	138.0±
4. Gates	None
5. Upstream Channel	Scantic River
6. Downstream Channel	Scantic River

j. Regulating Outlets. There are no functioning regulating outlets at this site. If repaired, the hydropower penstock possibly could be used for partial reservoir drawdown.

SECTION 2

ENGINEERING DATA

2.1 Design

Design data is unavailable for review of Scitico Dam. The principal design features for this dam are shown on the sketches enclosed in Appendix B.

2.2 Construction

No information is available concerning construction at Scitico Dam other than that the gravity section was built about 1890 and the cribbing was added in the 1920's. Remedial repairs performed in 1955 are described in Section 1.2.h.

2.3 Operation

Operational data is unavailable for this site.

2.4 Evaluation

a. Availability. The information made available was obtained from the current Owner, Springborn Lab Inc., and DEP.

b. Adequacy. Information obtained during the field investigation and from conversations with the Owner's representative, combined with information from the DEP, is considered adequate for a Phase I assessment.

c. Validity. The information provided by the Owner's representative and the DEP appears to be valid.

SECTION 3

VISUAL INSPECTION

3.1 Findings

a. General. The field inspection of Scitico Dam was performed on November 14, 1979. At the time of inspection, the reservoir water surface was about 2 inches above the dam crest. No underwater areas were inspected.

The observations and comments of the field inspection team are in the checklist which is Appendix A of this report.

b. Dam. The dam is considered to be in fair condition. River discharge at the time of inspection severely limited visual observations. Access to the right dam abutment is through a second-story window of the adjacent mill building. The dam crest boards were in-place and there was uniform flow over the dam crest. Tree branches and other debris were hanging on the dam crest (refer to Page C-1). There was no observable evidence of displacement of the timber cribbing, the rock fill or the stone blocks on the downstream face. The stone block masonry wall on the right side of the dam appeared to be in good condition with some minor loss of mortar between individual blocks. The brick masonry timber crib key wall was submerged at time of inspection. The nearly vertical rock abutment on the left side of the dam appears to be sound.

c. Appurtenant Structures. The wooden sluice gate, adjacent to the abutment on the right side of the dam which controls discharge to the hydropower penstock, was not operated during the inspection. The gate was completely submerged and could not be inspected. The wooden gate frame and steel operating mechanism appeared to be serviceable (refer to Page C-2).

Seepage estimated to be 15 gpm was discharging from around the penstock where it passes through the powerhouse foundation wall. The seepage spills onto the floor of the powerhouse and flows back into the river by way of the tailrace channel (refer to Page C-2). Inspection of the interior of the powerhouse was limited to the use of a flashlight since none of the light fixtures worked. It could not be determined if there was discharge from the draft tube.

d. Reservoir Area. The area surrounding the pond consists of moderate to steep, tree-covered slopes with numerous bedrock outcrops which rise 20 to 30 feet above normal pool elevation. A railroad bridge and highway bridge span the reservoir about 200 feet and 650 feet upstream of the dam, respectively.

e. Downstream Channel. The river channel is a steep narrow gorge no more than 200 feet wide for about 700 feet downstream of the dam beyond which the flood plain widens to about 0.2 miles. The channel is on an estimated one percent slope with heavily wooded banks.

3.2 Evaluation

The dam is considered to be in fair condition. The branches and other debris hanging on the dam crest should be removed. Further inspection of the dam is recommended during a period of low flow or with the discharge diverted through the hydropower penstock.

The sluice gate controlling flow to the hydropower penstock has never been operated by the current owners. If operable, it is the only means available for partial reservoir drawdown. Access to the sluice gate and dam is limited to a window in the adjacent mill building.

SECTION 4

OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 Operational Procedures.

a. General. Based on conversations with the Owner's representative, Mr. Ronald Miller, there are no operating procedures established for Scitico Dam.

b. Description of Any Warning System in Effect. According to Mr. Miller, no flood warning system is in effect at this site.

4.2 Maintenance Procedures

a. General. According to Mr. Miller, there is no maintenance performed on the dam.

b. Operating Facilities. According to Mr. Miller, the hydropower penstock has not been used by Springborn Lab, Inc.

4.3 Evaluation

There are no operational or maintenance procedures in effect at this site. Recommendations for improving these conditions are given in Section 7.3.

SECTION 5

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 General

The Scantic River upstream of Scitico Dam has an elongated watershed about 12 miles long and 5 miles wide. The eastern half of the basin is composed of forested, mountainous terrain. The western half of the watershed lies within the broad Connecticut River Valley. The topography consists of low-lying hills interspersed with marshes and swamps. The region is devoted to agriculture and contains a number of small towns and villages. Somersville Pond Dam is located on the Scantic River about 2.0 miles upstream of the Scitico Dam. The normal pool storage capacity and surface area of this reservoir are estimated to be 320 acre-feet and 40 acres, respectively.

5.2 Design Data

Neither hydraulic nor hydrologic design data are available for Scitico Dam.

5.3 Experience Data

There are no records of high reservoir pools or river discharges at this site. A portion of the timber cribbing was washed-out during hurricane Diane in August 1955. River discharges associated with this event are not available.

5.4 Test Flood Analysis

The recommended test flood range for a "Small" size, "High" hazard dam is from one-half of the Probable Maximum Flood (PMF) to the full PMF. Due to the non-residential nature of the hazard area and the possibility that no lives would be lost during a breach flood, the selected test flood is one-half of the PMF.

Hydrologic and hydraulic calculations were performed with assistance of the HEC-1-DB computer program. The flood hydrographs were constructed from the Snyder unit hydrographs using Snyder coefficients which reflect the terrain of the drainage area, an initial infiltration of zero, and a constant loss rate of 0.05 inches per hour. The Hop Brook Adjustment Factor was used to reduce the Probable Maximum Precipitation based on the drainage area. Stage vs. discharge and stage vs. storage relationships were developed. The routing sequence consisted of dividing the watershed into a sub basin for each significant impoundment and routing the inflow hydrographs through each reservoir. The impoundments were assumed to be at their respective spillway crest elevations at the beginning of the storm event.

The test flood peak inflow to Scitico Reservoir was computed as 19,280 cfs. The routed test flood outflow of 19,070 cfs overtops the right abutment wall by 12.8 feet. The spillway is capable of discharging approximately 3,350 cfs prior to overtopping of the right abutment wall, which is about 18 percent of the routed test flood outflow.

5.5 Dam Failure Analysis

The primary hazard area is the Springborn Lab, Inc. building immediately adjacent to the right abutment of Scitico Dam. It is evident that a full or partial failure of the dam would direct breach discharges against the building, possibly causing excessive damage. More than a few lives could possibly be lost in the building. The first residential area is a single-family dwelling located about 1,350 feet downstream of the dam.

A failure of the dam was simulated by the HEC-1-DB computer program assuming a 76-foot wide by 22-foot deep breach with vertical side slopes developing within 30 minutes. The failure is assumed to occur with the reservoir surface at the top of the dam. The assumed breach would direct a flow of 2,250 cfs against the laboratory building. The breach flood was also routed to the first residential area and a flood water depth of 3.4 feet was computed at this location. A flood of this depth would be contained within the channel banks.

SECTION 6

STRUCTURAL STABILITY

6.1 Visual Observations

There were no deficiencies observed during this visual inspection which suggest an unstable condition at Scitico Dam.

6.2 Design and Construction Data

No information is available concerning the dam design or construction.

6.3 Post Construction Changes

The remedial repairs performed on the dam following a partial wash-out of the timber cribbing in August 1955 during Hurricane Diane are described in Section 1.2.h. It is apparent, from the information describing this incident (available from the Connecticut DEP), that the dam probably connot withstand very high river discharges.

6.4 Seismic Stability

Scitico Dam is located in Seismic Zone 1 on the "Seismic Zone Map of Contiguous States". A dam located in Seismic Zone 1 need not be evaluated for seismic stability, according to the Recommended Guidelines for Phase I Dam Inspections.

SECTION 7

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition. The visual observations and review of the available information indicate that Scitico Dam is in fair condition. No structural deficiencies could be observed during the visual inspection which would render an unsafe assessment. However, a partial wash-out of the timber crib, during the Hurricane Diane flood in August 1955, suggests that the dam cannot withstand high river discharges. There is no functioning low level outlet provided at this site; although, the hydropower penstock if operable could be used for partial reservoir drawdown. The operating condition of the sluice gate controlling discharge into the penstock is unknown. Even if operable, the discharge capacity of the facility as an emergency outlet is restricted since flows must pass through the abandoned turbine.

b. Adequacy of Information. Information obtained during the field investigation and from conversations with the Owner's representative, combined with information from the DEP, is considered adequate for a Phase I assessment.

c. Urgency. Further investigations and remedial measures should be implemented within one year of receipt of this Phase 1 Inspection Report.

7.2 Recommendations

It is recommended that the Owner, Springborn Lab, Inc., retain the services of a qualified, registered professional engineer for the following purposes:

1. Perform detailed hydrologic and hydraulic analyses in conjunction with structural stability analyses to assess the ability of the structure to withstand high flood flows.

2. Study the suitability of the hydropower facilities as an outlet works and determine if additional outlet works should be provided.

3. Perform a detailed inspection of the dam during dry weather either with a low river discharge flowing over the dam or with the discharge diverted through the hydropower penstock.

7.3 Remedial Measures

a. Operation and Maintenance Procedures. The Owner should also implement the following operation and maintenance measures :

1. The operating condition of the hydropower penstock sluice gate should be determined and the gate repaired, if necessary. The tailrace should be cleared of any restrictions to flow.

2. The branches and other debris hanging on the dam crest should be removed.

3. A program of annual technical inspection should be instituted.

4. A formal surveillance plan, including round-the-clock monitoring during heavy precipitation, should be developed.

7.4 Alternatives

As an alternative to the above recommendations and remedial measures, the dam could be breached and the impoundment drained.

APPENDIX A

INSPECTION CHECKLIST

VISUAL INSPECTION CHECK LIST

INSPECTION TEAM ORGANIZATION

Project: SCITICO DAM

National I.D. #: CT 00529

Location: Enfield, CT

Type of Dam: Composite - masonry and timber crib

Inspection Date(s): November 14, 1979

Weather: Overcast, 40°

Pool Elevation: 138.2 ± MSL

Inspection Team

Leonard Beck	O'Brien & Gere	Structures
Steven Snider	O'Brien & Gere	Foundations & Materials
Alan Hanscom	O'Brien & Gere	Structures
Rodney Georges	Bryant & Associates	Hydrology/Hydraulics

*Mr. John J. Williams, Vice-President, O'Brien & Gere has visited the site but not necessarily in conjunction with the inspection team.

Owner's Representative

Mr. Ronald Miller

VISUAL INSPECTION CHECK LIST

Project: SCITICO DAM

National I.D. #: CT 00529

Date(s): November 14, 1975

AREA EVALUATED	CONDITIONS
CONCRETE/MASONRY DAM	
Crest Elevation	Timber Crib - 138.0
Current Pool Elevation	138.2 ±
Maximum Impoundment to Date	Unknown.
Any Noticeable Seepage	Obscured by overflow.
Conditions of Abutment	Left abutment is a rock slope. Masonry on right abutment showed some minor loss of joint material.
Drains	None.
Water Passages	None.
Foundation	Submerged. Assumed to be bedrock.
Masonry/Concrete Surface Cracks	None.
Structural Cracking	None.
Vertical and Horizontal Alignment	Good.
Monolith Joints	Obscured by overflow.
Construction Joints	Obscured by overflow.
Upstream Embankment	None.
Instrumentation System	None
Inspection Galleries	None.

VISUAL INSPECTION CHECK LIST

Project: SCITICO DAM

National I.D. #: CT 00529

Date(s): November 14, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	
General Condition	Timber crest planks appear to slope up to downstream dam crest
Loose Rock Overhanging Channel	None.
Trees Overhanging Channel	None.
Floor of Approach Channel	Scantic River bottom.
b. Weir and Training Walls	
General Condition of Concrete	Masonry foundation walls of adjacent bldg. in fair condition.
Rust or Staining	None.
Spalling	Some loss of mortar.
Any Visible Reinforcing	N/A
Any Seepage or Efflorescence	N/A
Drain Holes	None.
c. Discharge Channel	
General Condition	Good. Appeared to be some scour of river bed at toe of dam.

VISUAL INSPECTION CHECK LIST

Project: SCITICO DAM

National I.D. #: CT 00529

Date(s): November 14, 1979

AREA EVALUATED	CONDITIONS
HYDROPOWER FACILITIES -	
Approach Channel	Scantic River
Training Walls	Industrial building masonry foundation wall.
Intake Structure	Wood frame sluice gate - 8 ft. wide. Gate has been closed since current owner's acquisition of property.
Penstock	~36" ϕ Steel or cast iron. Seepage of about 15 gpm flowing from around conduit where it passes through wall.
Turbine(s)	One horizontal-blade turbine equipped with mechanical take-off. Heavily corroded and not in use.
Powerhouse	Inspection performed with flashlight. Floor carrying seepage discharge.
Tailrace	Sheet steel doors over exit portals. One door open to release seepage. Channel invert clogged with debris. Training wall in fair condition.

APPENDIX B

ENGINEERING DATA

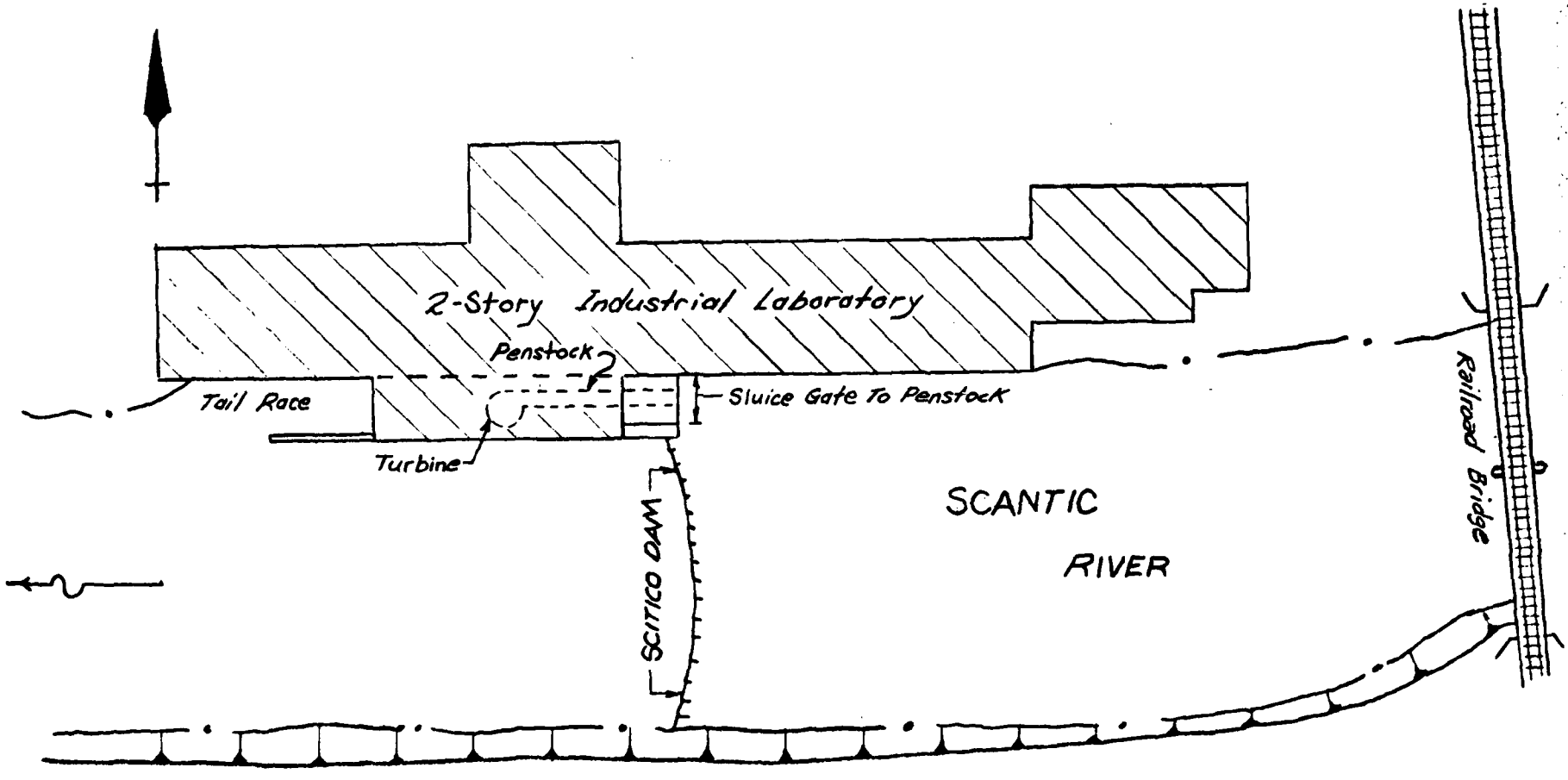
O'BRIEN & GERE
ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM				

APPENDIX B

ENGINEERING DATA

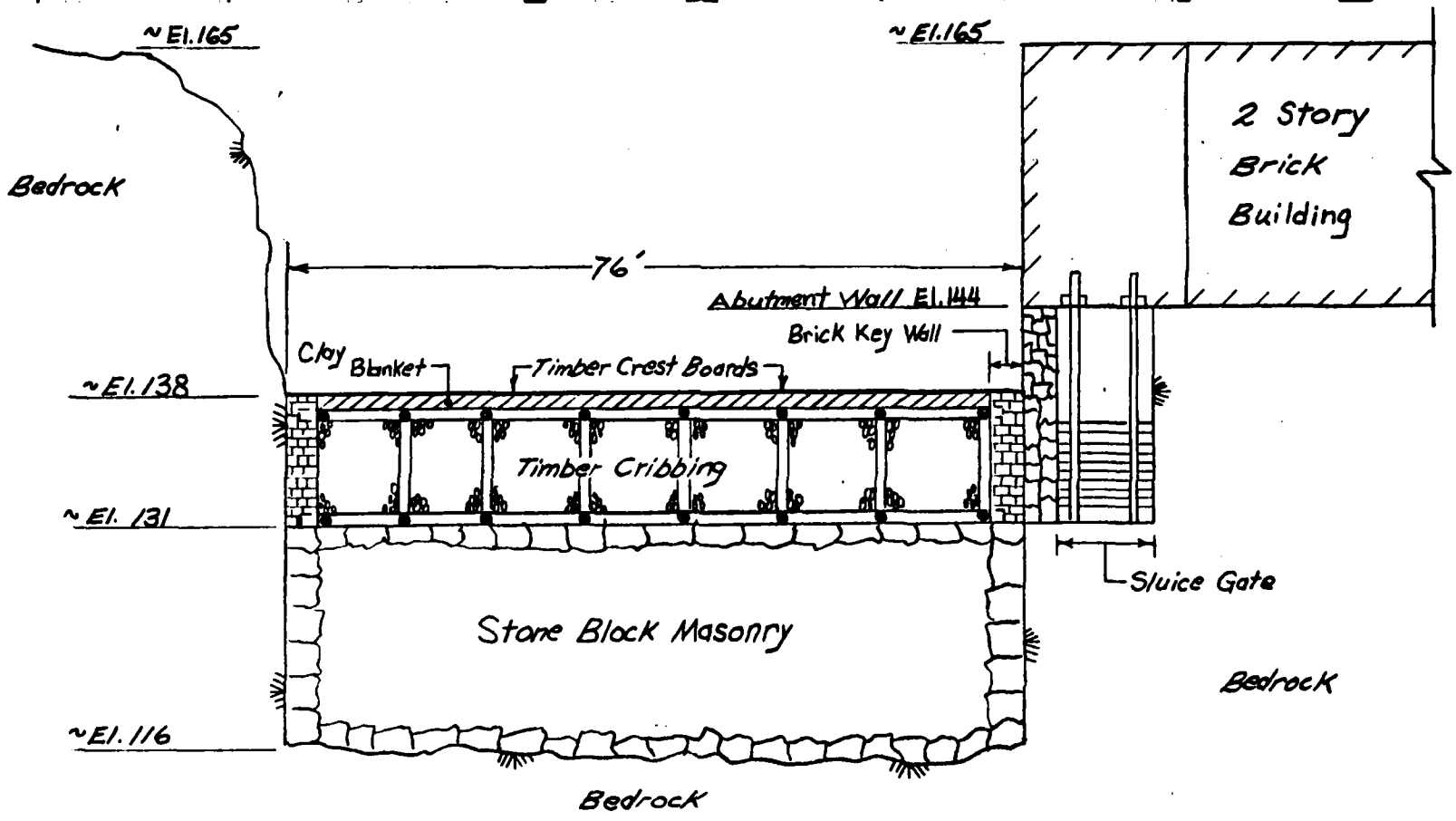
TABLE OF CONTENTS



SITE PLAN
SCITICO DAM

CT 00529

B-1



UPSTREAM PROFILE

SCITICO DAM

CT 00529

B-2

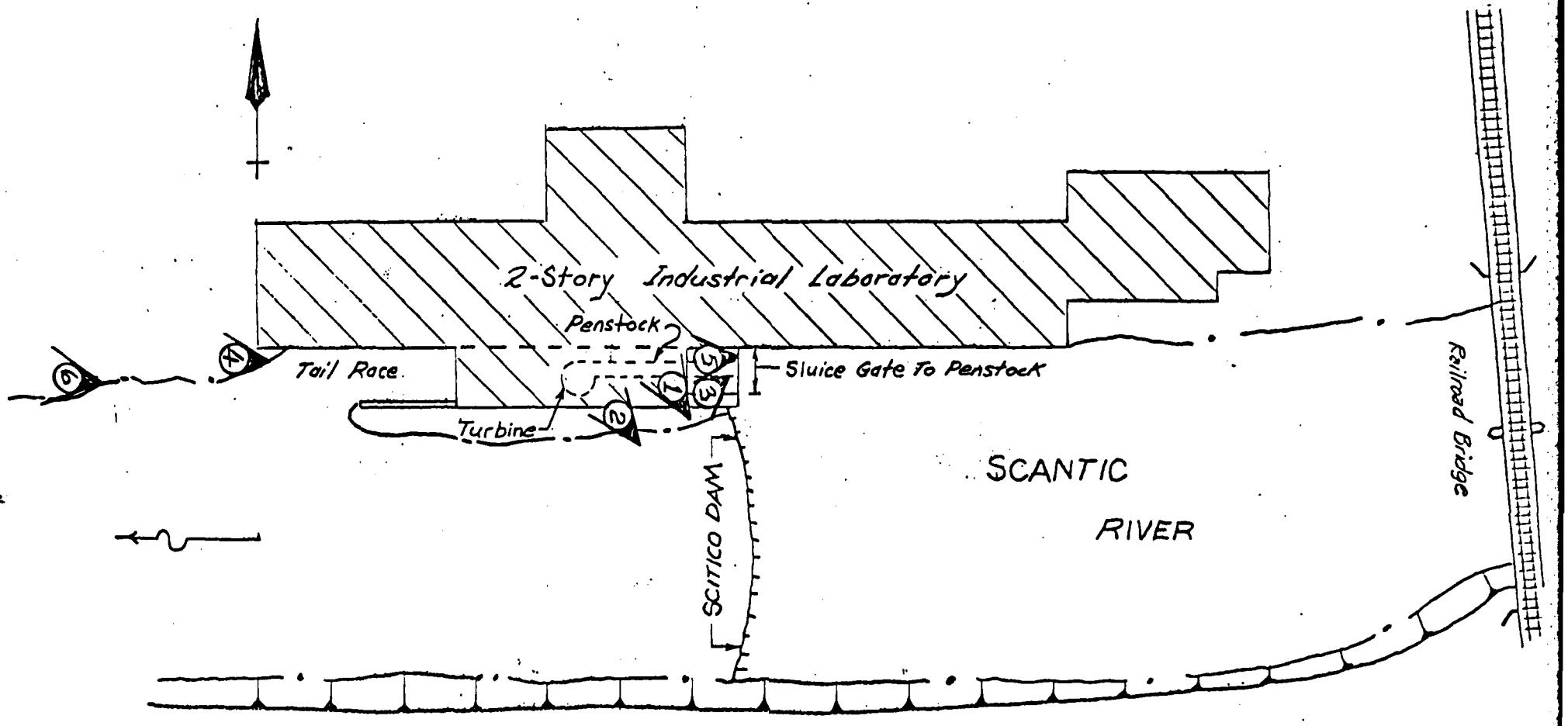
Note:

Sketch prepared from visual inspection and recorded observations made during remedial repairs in 1955.

APPENDIX C

PHOTOGRAPHS

APPENDIX C
SELECTED PHOTOGRAPHS OF PROJECT

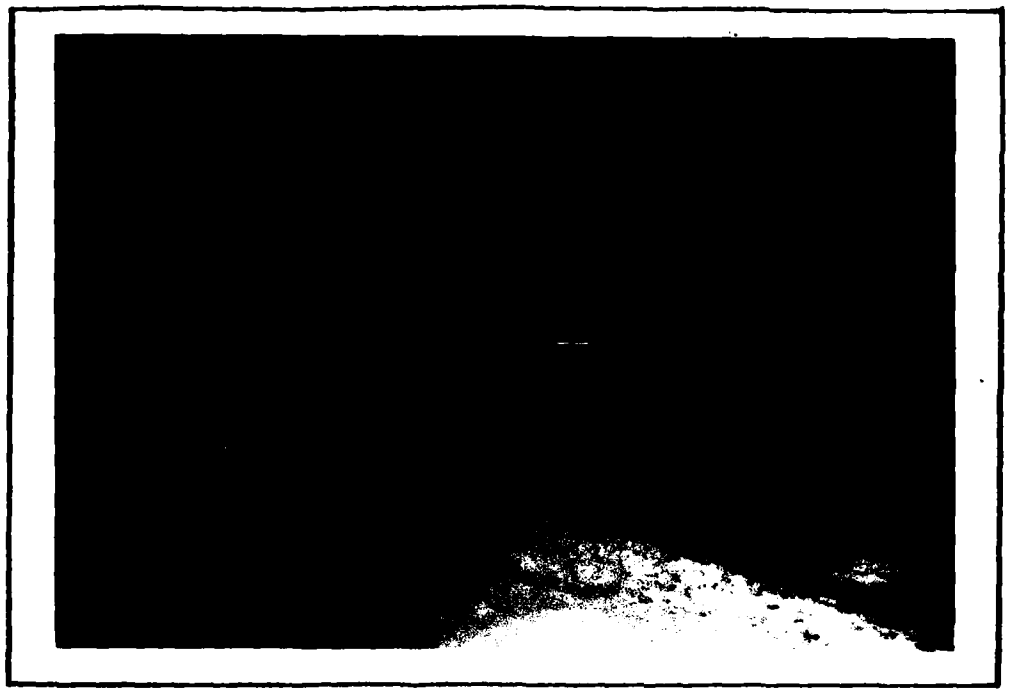


PLAN

SCITICO DAM

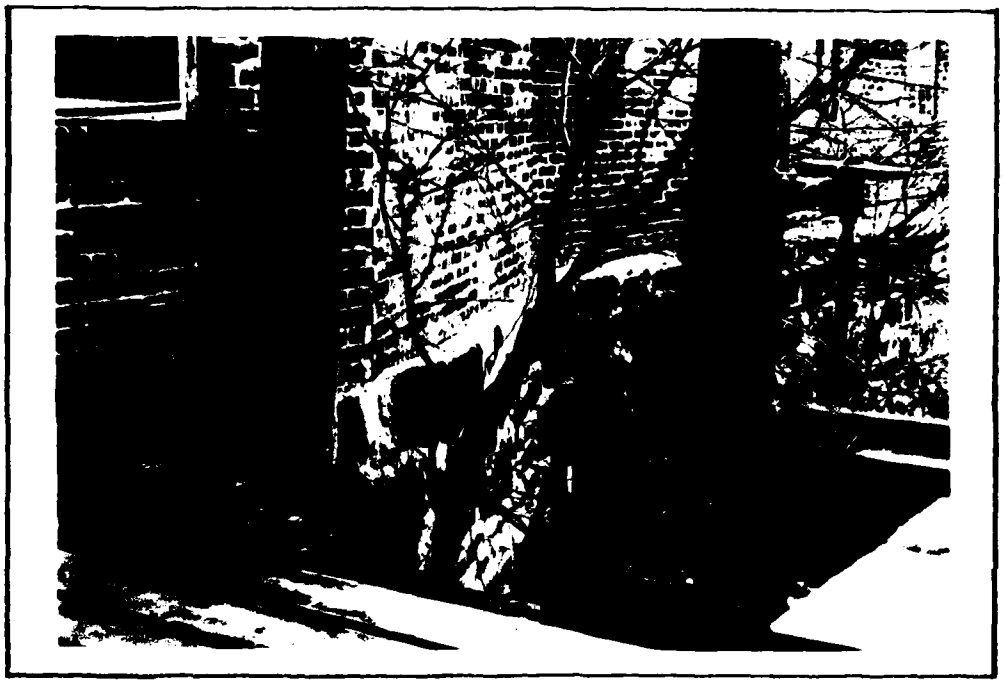
CT 00529

Pg. A



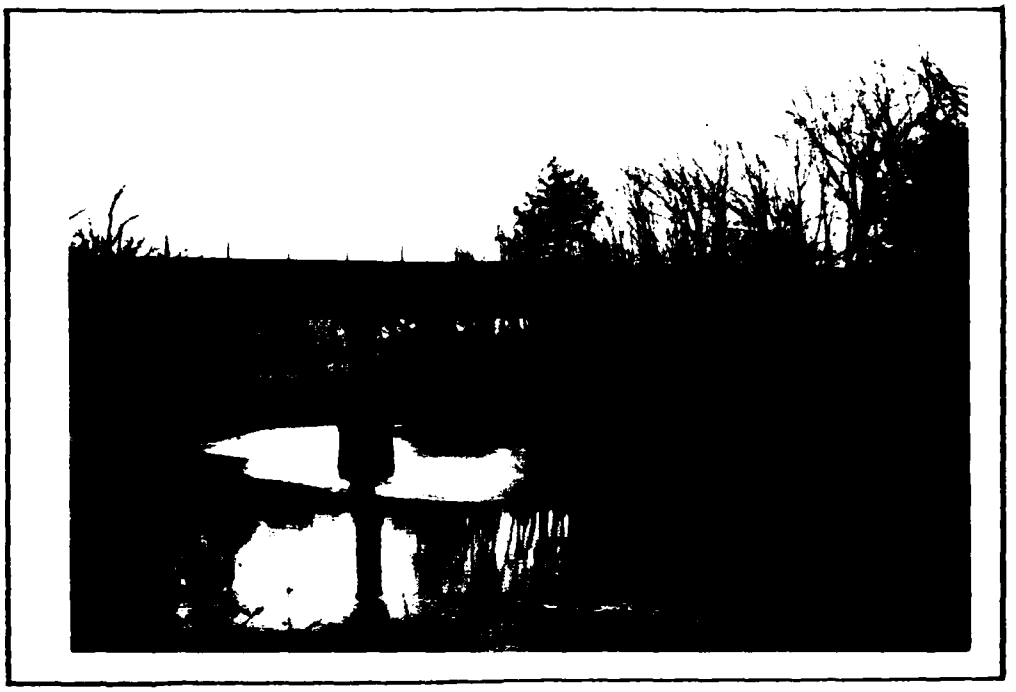
1. LEFT ABUTMENT OF THE DAM WHICH IS NEARLY VERTICAL EXPOSED BEDROCK. (11/14/79)

2. VERTICAL ROCK ABUTMENT IMMEDIATELY DOWNSTREAM OF THE DAM. (11/14/79)



3. HOISTING MECHANISM FOR THE SLUICE GATE WHICH CONTROLS FLOW TO THE PENSTOCK LEADING TO A TURBINE WHICH HAS BEEN OUT OF SERVICE FOR MANY YEARS. (11/14/79)

4. TAILRACE FOR THE OUT OF SERVICE TURBINE. (11/14/79)



5. IMPOUNDMENT IMMEDIATELY UPSTREAM OF THE DAM. (11/14/79)

6. RIVER CONDITIONS IMMEDIATELY DOWNSTREAM OF THE DAM. (11/14/79)

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

O'BRIEN & GERE
ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM				

APPENDIX D

HYDROLOGIC & HYDRAULIC COMPUTATIONS

TABLE OF CONTENTS

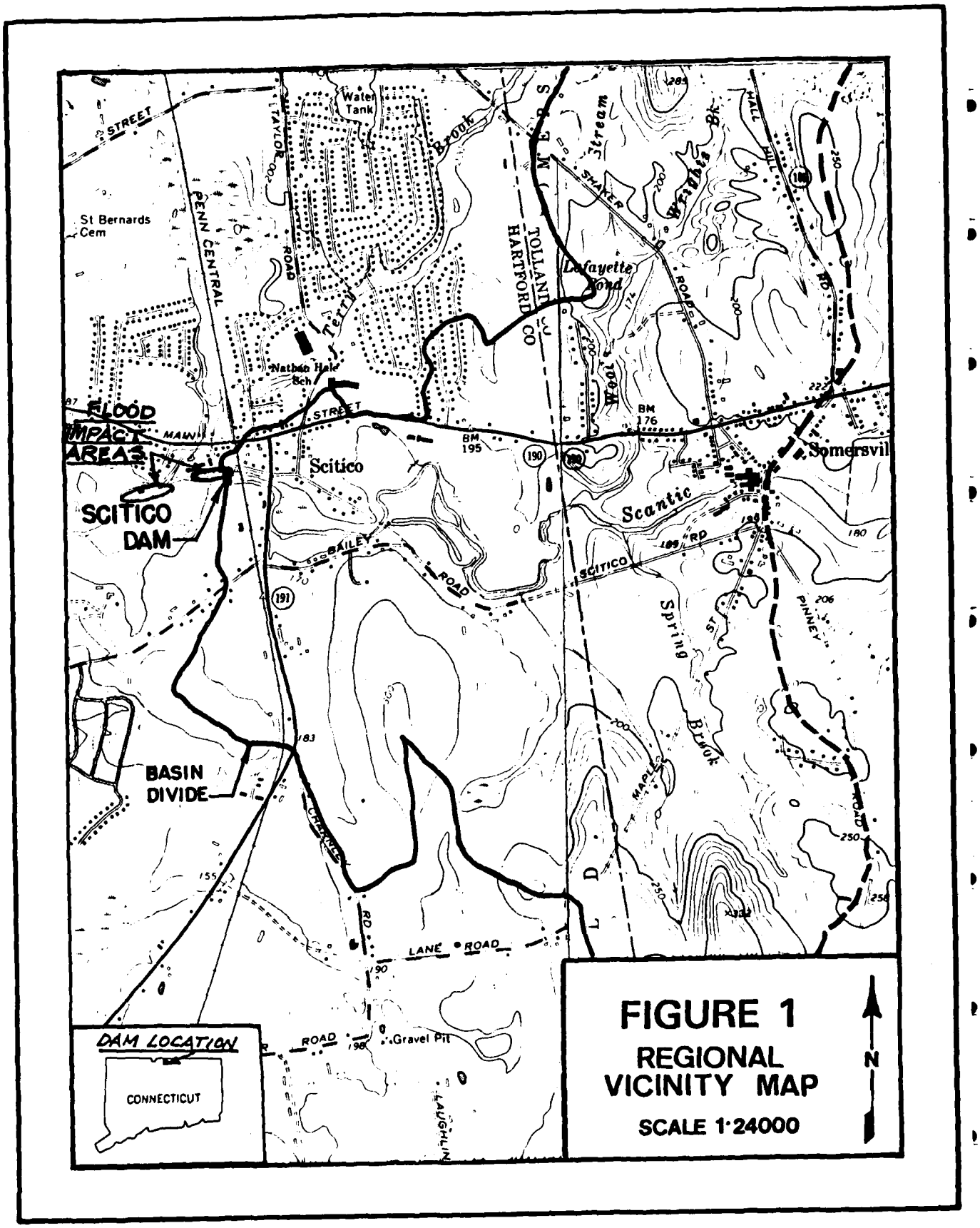


FIGURE 1
REGIONAL VICINITY MAP
SCALE 1:24000

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM - H&H	D-2	SHS	3/3/80	2060-001

HYDROLOGIC & HYDRAULIC CALCULATIONS

Total Drainage Area : 64 sq.mi.

Somersville Pond Sub-basin Area : 60 sq.mi. (2.0 miles u/s of Scitico Dam)

Scitico Dam Subdrainage Area : 4 sq.mi.

SCITICO RESERVOIR AREA @ EL. 116 (BOTTOM OF DAM) = 0 ACRES

Scitico Res. Area @ Top of Dam El. 138 = 7 acres (Normal Pool)

Scitico Res. Area @ El. 140 = 28 acres

Scitico Res. Area @ El. 150 = 77 acres

Scitico Res. Area @ El. 160 = 153 acres

SCITICO RES. AREA @ EL. 170 = 248 ACRES

Somersville Pond Area @ El. 180 = 40 acres (Normal Pool)

Somersville Pond Area @ El. 190 = 440 acres

SOMERSVILLE POND AREA @ EL. 200 = 1,550 ACRES

PMP DATA

The 24 hr., 200 sq.mi. Index Rainfall is 21.1 inches

Ref: HMS Report #33

6 hr. % = 89 %
12 hr. % = 105 %
24 hr. % = 113 %
48 hr. % = 120 %

Tp Computations - Scitico Dam

Snyder Coefficients:

$C_t = 2.5$

$C_p = 0.5$

$$T_p = C_t (L L_{ca})^{0.3}$$

$L = 4.9$ miles

$L_{ca} = 1.5$ miles

$$T_p = 2.5 (4.9 \times 1.5)^{0.3} \simeq 4.5 \text{ hours}$$

C'BRIEN & GERE
ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM - H&H	D-3	SHS	3/3/80	2060-001

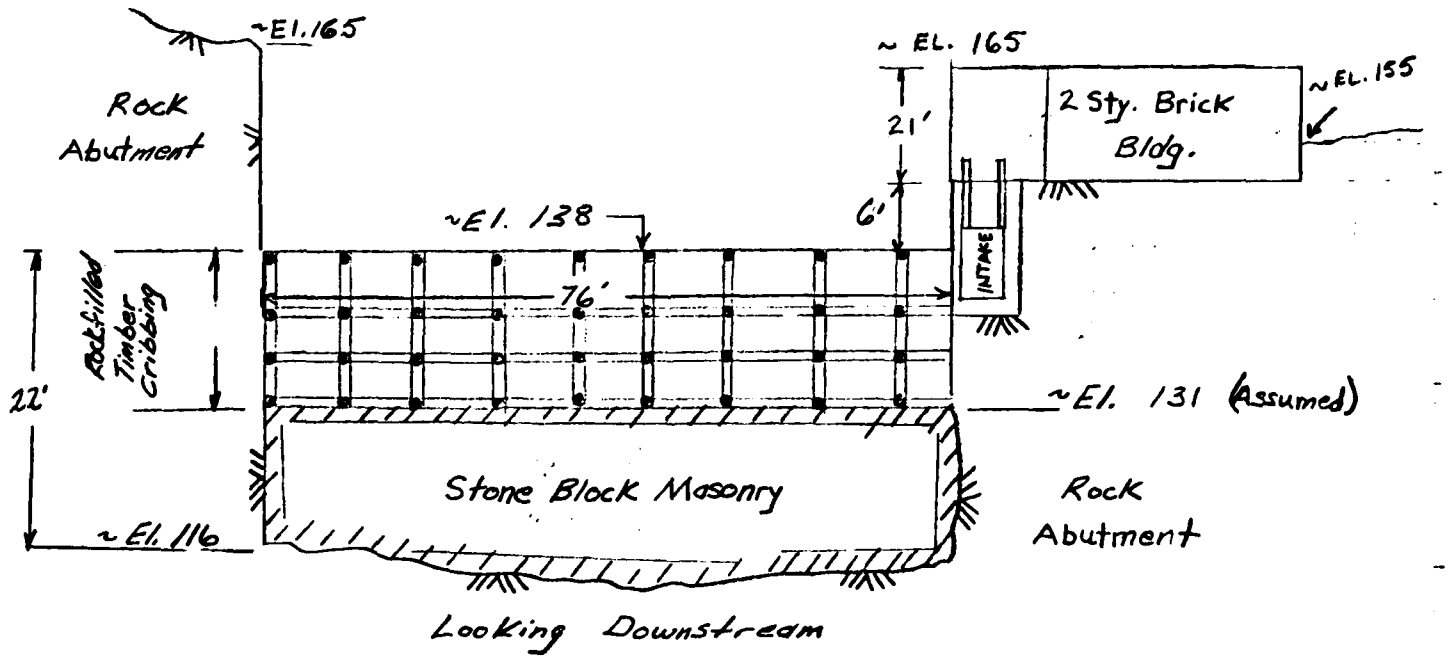
Tp Computations - Somersville Pond

$C_t = 3.0$
$C_p = 0.5$

$L = 12.9$ miles
$L_{ca} = 3.5$ miles

$T_p = 3.0(12.9 \times 3.5)^{0.3} \pm 9.4$ hours

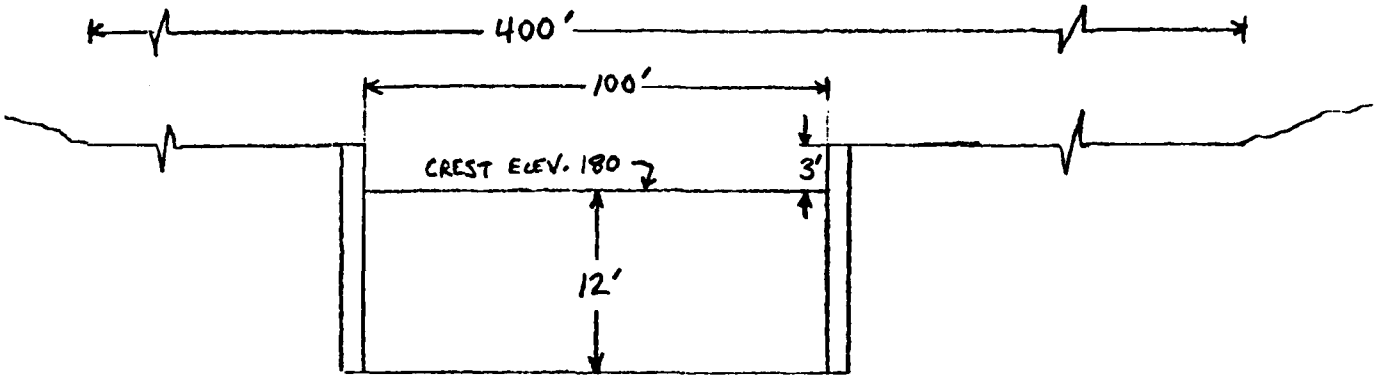
Spillway & Dam Profile: Scitico



O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM - H & H	D-4	SHS	3/20/80	2060-001

SPILLWAY & DAM PROFILE : SOMERSVILLE POND



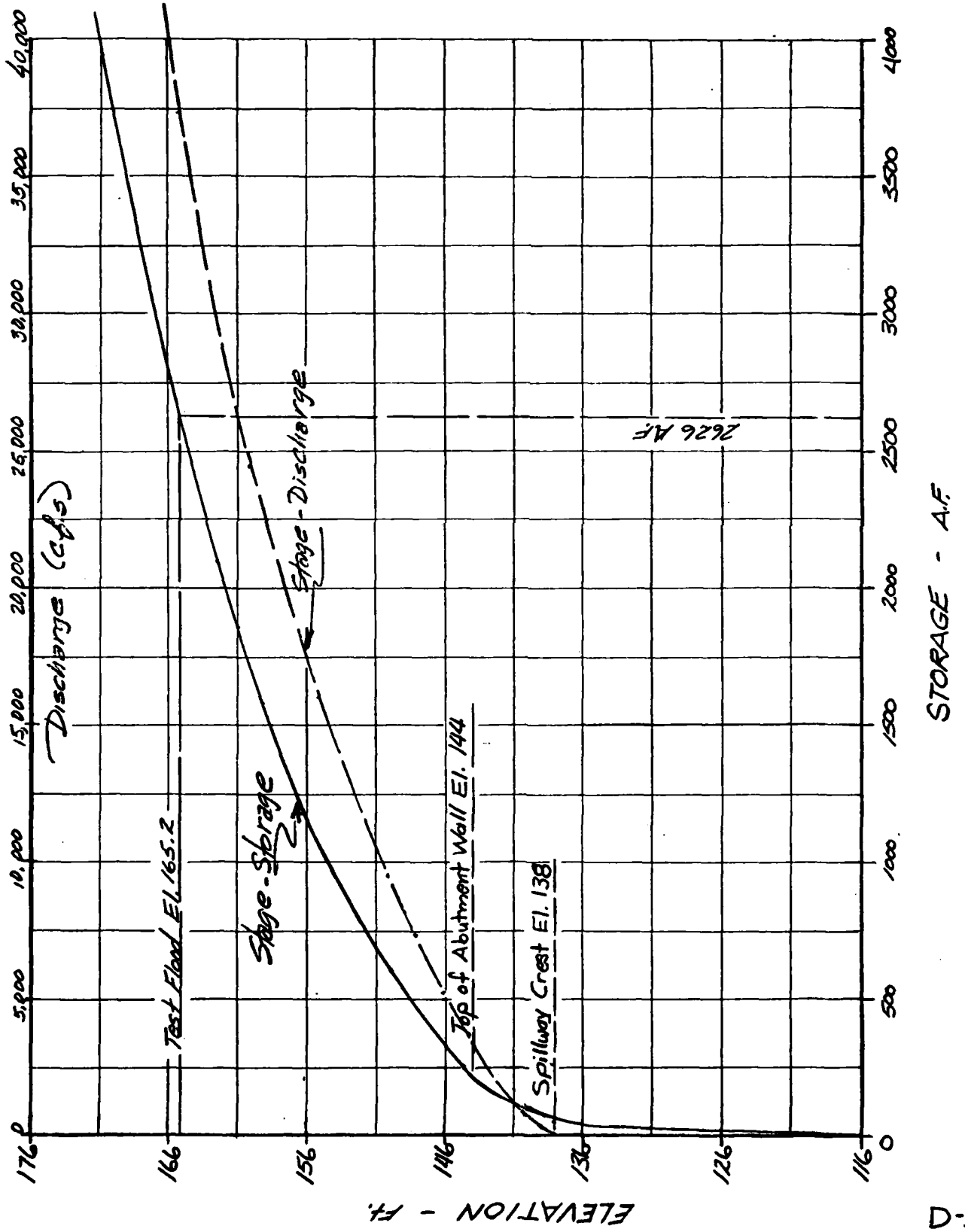
STAGE - DISCHARGE → SCITICO DAM

$Q = CLH^{3/2}$ → $C_{DAM} = 3.0$, $L_{DAM} = 76$ FT. ; $C = 2.8$ (AROUND BUILDING, OVER BUILDING, OVER ABUTMENTS)

ELEV.	OVER DAM		AROUND BUILDING			OVER BUILDING			OVER ROCK ABUTMENT			Q_{TOTAL}
	H (FT.)	Q (CFS)	H (FT.)	$L_{EFF.}$ (FT.)	Q (CFS)	H (FT.)	L (FT.)	Q (CFS)	H (FT.)	$L_{EFF.}$ (FT.)	Q (CFS)	
138	0	0										0
139	1	228										228
140	2	645										645
142	4	1,824										1,824
144		3,351										3,351
146	8	5,159										5,159
148	10	7,210										7,210
150	12	9,478										9,478
155	17	15,981	0	0	0							15,981
160	22	23,527	5	30	939							24,466
165	27	31,987	10	60	5,313	0	60	0	0	0	0	37,300
170	32	41,272	15	90	14,640	5	60	1,878	5	20	626	58,416

O'BRIEN & GERE
ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM - H&H	D-5	SHS	3/27/80	2060-001



O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO
SCITICO DAM - H&H	D-6	SHS	3/20/80	2060-001

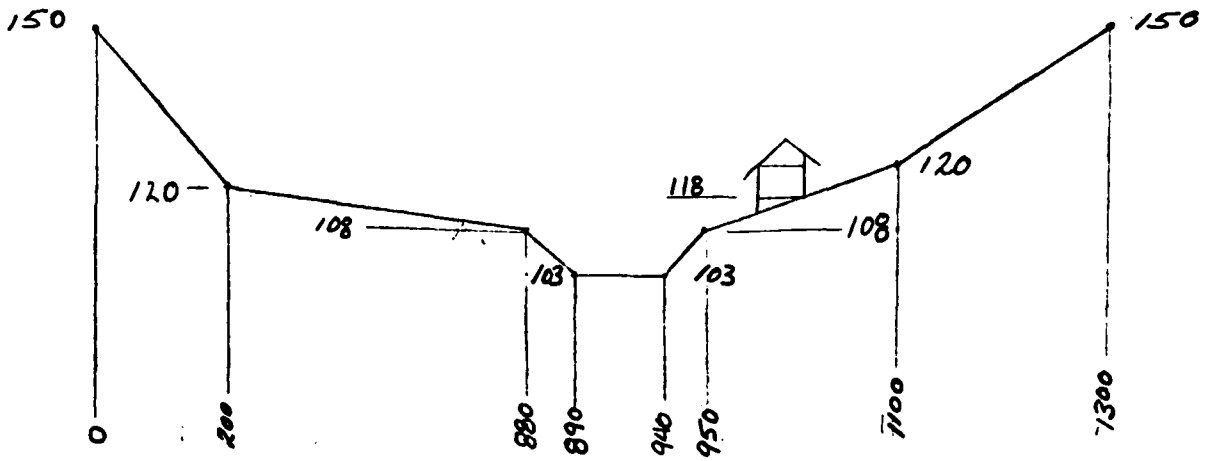
STAGE - DISCHARGE → SOMERSVILLE POND DAM

$Q = CLH^{3/2}$ → $C_{SPWY.} = 3.1$, $L = 100$ FT. ; $C_{DAM} = 2.9$, L VARIES - BASE $L = 300$ FT.

ELEVATION NGVD	HEAD (Spillway) ft.	Q (Spillway) ($C = 3.1$)	H (DAM) FT.	EFFECTIVE LENGTH OF DAM FT.	Q (Dam) ($C = 2.9$)	TOTAL DISCHARGE cfs
180 Spillway Crest	0	0	-	300	-	0
181	1	310	-	300	-	310
182	2	877	-	300	-	877
183 Dam Crest	3	1611	0	300	-	1611
184	4	2480	1	325	943	3423
185	5	3466	2	350	2871	6337
190	10	9803	7	475	25,512	35,315
200	20	27,727	17	800	162,615	190,342

HAZARD AREA - 1,350 feet Downstream

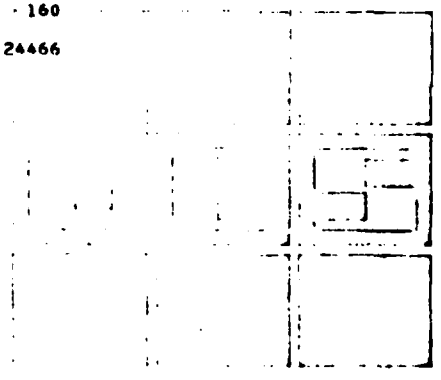
SECTION PROFILE



MANNING'S COEFFICIENTS : RIVER - 0.030 River Slope = 0.01 ft/ft
OVERBANKS - 0.060

FLOOD HYDROGRAPH PACKAGE (HEC-1) FLOOD ROUTING OVER SCITICO DAM
DAM SAFETY VERSION JULY 1978
~~LAST MODIFICATION 26 FEB 79~~ INPUT

```
     1             A         HYDROLOGIC ANALYSIS OF SCITICO DAM
     2             A               ~~NATIONAL DAM SAFETY PROGRAM~~
     3             A         NEW ENGLAND DIVISION - CORPS OF ENGINEERS
     4             B    300        0       30        0        0        0        0        0       -4        0
     5             ~~J1   5~~
     6             J    1         9        1
     7             J1   0.1       0.2      0.3      0.4      0.5      0.6      0.7      0.8      1.0
     8             ~~K    0  SOMERS~~                                                        1
     9             K1        INFLOW TO SOMERSVILLE POND
    10             M    1         1       60        0       64                                         1
    11             ~~P    0      21.1       89      105      113      120~~
    12             T                                                          0.0     0.05
    13             J    9.4       0.5
    14             ~~X   1.7     -0.1        2~~
    15             K    1    POND                                                       1
    16             K1        ROUTED OUTFLOW FROM SOMERSVILLE POND
    17             ~~Y                                          1        1~~
    18             Y1   1                                                        -180      -1
    19             Y4   140      141      182      183      184      185      190      200
    20             ~~Y5   0      310      477     1611     3423     6337    35315   190342~~
    21             SA   40       440     1550
    22             SE   180      190      200
    23             ~~SA  140~~
    24             SD   143
    25             K    0 SCITICO                                                  1
    26             ~~K1        INFLOW TO SCITICO LESS SOMERSVILLE~~
    27             M    1         1      4.0        0       64                                         1
    28             ~~P    0      21.1       89      105      113      120~~
    29             ~~T                                                          0.0     0.05~~
    30             J    4.5       0.5
    31             X   -1.7      -0.1        2
    32             ~~K    2  TOTAL                                                   1~~
    33             K1        COMBINE HYDROGRAPHS
    34             K    1  SCITIC                                                  1
    35             ~~K1        ROUTED OUTFLOW FROM SCITICO DAM~~
    36             Y                                            1        1
    37             Y1   1                                                        -138      -1
    38             ~~Y4   139      139      140      142      144      146      148      150      155~~      160
    39             Y4   165      170
    40             Y5   0        224      645     1824     3351     5159     7210     9478    15981     24466
    41             ~~Y5 37300    58416~~
    42             SA   0        7        28       77      153      248
    43             SE   116      138      140      150      160      170
    44             ~~SA  138~~
    45             SD   138
    46             K    99
```



FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79

RUN DATE 03/27/80.
TIME 12.20.42.

HYDROLOGIC ANALYSIS OF SCITICO DAM
NATIONAL DAM SAFETY PROGRAM
NEW ENGLAND DIVISION - CORPS OF ENGINEERS

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
300	0	30	0	0	0	0	0	-4	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 9 LRTIO= 1

PERCENTAGES OF PMF — RTIOS= .10 .20 .30 .40 .50 .60 .70 .80 1.00

INFLOW HYDROGRAPH DEVELOPMENT FOR SOMERSVILLE POND

SUB-AREA RUNOFF COMPUTATION

INFLOW TO SOMERSVILLE POND

ISTAO	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
SOMERS	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	50.00	0.00	64.00	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	21.10	89.00	105.00	113.00	120.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .856

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	0.00	.05	0.00	0.00

UNIT HYDROGRAPH DATA
TP= 9.40 CP= .50 NTA= 0

RECESSION DATA
STRTQ= -1.70 QRCSN= -.10 RTIOR= 2.00

UNIT HYDROGRAPH 100 END-OF-PERIOD ORDINATES, LAG= 9.39 HOURS, CP= .50 VOL= .97

90.	92.	149.	307.	440.	585.	739.	902.	1073.	1248.
1421.	1580.	1719.	1840.	1941.	2023.	2083.	2120.	2130.	2100.
2032.	1954.	1879.	1806.	1737.	1670.	1606.	1544.	1485.	1428.
1373.	1320.	1269.	1220.	1174.	1128.	1085.	1043.	1003.	965.
928.	892.	858.	825.	793.	762.	733.	705.	678.	652.
627.	603.	579.	557.	536.	515.	495.	476.	458.	440.
423.	407.	391.	376.	362.	348.	334.	322.	309.	298.
286.	275.	264.	254.	245.	235.	226.	217.	209.	201.
193.	186.	179.	172.	165.	159.	153.	147.	141.	136.
131.	126.	121.	116.	112.	107.	103.	99.	95.	92.

END-OF-PERIOD FLOW

MO.	DA.	HR.	MN.	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.	DA.	HR.	MN.	PERIOD	RAIN	EXCS	LOSS	COMP Q
													SUM	21.67	19.91	1.77	1512457.
														(551.)	(506.)	(45.)	(42828.81)

UNITED COMPUTING SYSTEMS, INC.

HYDROGRAPH ROUTING

ROUTED OUTFLOW FROM SOMERSVILLE POND

	ISTAO	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	POND	1	0	0	0	0	1	0	0

ROUTING DATA

	OLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
	0.0	0.000	0.00	1	1	0	0	0

	NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
	1	0	0	0.000	0.000	0.000	180.	1

STAGE	180.00	181.00	182.00	183.00	184.00	185.00	190.00	200.00
FLOW	0.00	313.00	877.00	1611.00	3423.00	6337.00	35315.00	190342.00

STAGE-DISCHARGE DATA FOR SOMERSVILLE POND

SURFACE AREA=	48.	449.	1554.
CAPACITY=	0.	2042.	11424.
ELEVATION=	180.	190.	200.

STAGE-STORAGE DATA FOR SOMERSVILLE POND

	CREL	SPDIM	CIRW	EXPW	ELEVL	COWL	CAREA	EXPL
SPILLWAY CREST ELEVATION →	180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

	TOPEL	COOD	EXPD	DAMWID
TOP OF DAM ELEVATION →	183.0	0.0	0.0	0.

0.1 PMF
PEAK OUTFLOW IS 3600. AT TIME 49.00 HOURS

0.2 PMF
PEAK OUTFLOW IS 7244. AT TIME 49.00 HOURS

0.3 PMF
PEAK OUTFLOW IS 10862. AT TIME 49.00 HOURS

0.4 PMF
PEAK OUTFLOW IS 14473. AT TIME 49.00 HOURS

0.5 PMF
PEAK OUTFLOW IS 18074. AT TIME 49.00 HOURS

0.6 PMF
PEAK OUTFLOW IS 21663. AT TIME 49.00 HOURS

0.7 PMF
PEAK OUTFLOW IS 25236. AT TIME 49.00 HOURS

0.8 PMF
PEAK OUTFLOW IS 28791. AT TIME 49.00 HOURS

1.0 PMF
PEAK INFLOW IS 36152. AT TIME 49.00 HOURS

LOCAL RUNOFF TO SCITICO DAM

SUB-AREA RUNOFF COMPUTATION

INFLOW TO SCITICO LESS SOMERSVILLE

	ISTAO	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	CITICO	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	4.00	0.00	64.00	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	21.10	84.00	105.00	113.00	120.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .856

LOSS DATA

LKOPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	0.00	.05	0.00	0.00

UNIT HYDROGRAPH DATA

TP= 4.50 CP= .50 NTA= 0

RECESSION DATA

STRTQ= -1.70 QRCSN= -.10 RTIOR= 2.00

UNIT HYDROGRAPH TO END-OF-PERIOD ORDINATES. LAG= 4.54 HOURS. CP= .50 VOL= 1.00

10.	36.	73.	117.	165.	212.	250.	277.	291.	289.
271.	250.	230.	212.	195.	180.	166.	153.	141.	130.
119.	110.	101.	93.	86.	79.	73.	67.	62.	57.
53.	48.	45.	41.	38.	35.	32.	30.	27.	25.
23.	21.	20.	18.	17.	15.	14.	13.	12.	11.
10.	9.	9.	8.	7.	7.	6.	6.	5.	5.
4.	4.	4.	4.	3.	3.	3.	3.	2.	2.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	21.67	19.91	1.77	103743.
										(551.)	(506.)	(45.)	(2937.67)

COMBINING SOMERSVILLE POND ROUTED OUTFLOW AND SCITICO DAM RUNOFF

COMBINE HYDROGRAPHS

COMBINE HYDROGRAPHS

	ISTAO	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	TOTAL	2	0	0	0	0	1	0	0

HYDROGRAPH ROUTING

ROUTED OUTFLOW FROM SCITICO DAM

ISTAN	ICOMP	ICON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
SCITIC	1	0	0	0	0	1	0	0

ROUTING DATA

NSTPS	NSTOL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-138.	-1

NLOSS	CLOSS	AVG	IPES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

STAGE	138.00	139.00	140.00	142.00	144.00	146.00	148.00	150.00	155.00	160.00	165.00
	170.00										
FLOW	0.00	228.00	645.00	1824.00	3351.00	5159.00	7210.00	9478.00	15981.00	24466.00	37300.00
	54416.00										

SURFACE AREA=	0.	7.	20.	77.	153.	248.
CAPACITY=	0.	51.	84.	589.	1717.	3703.
ELEVATION=	116.	138.	140.	150.	160.	170.

STAGE-STORAGE DATA FOR SCITICO DAM

STAGE-DISCHARGE DATA FOR SCITICO DAM

	CSPL	SPWID	COQW	EXPW	CLEVL	COQL	CAREA	EXPL
SPILLWAY CREST ELEVATION →	138.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

	TOPEL	COQD	EXPD	DAMWID
TOP OF DAM ELEVATION →	138.0	0.0	0.0	0.

0.1 PMF
PEAK OUTFLOW IS 3805. AT TIME 49.50 HOURS

0.2 PMF
PEAK OUTFLOW IS 7667. AT TIME 49.50 HOURS

0.3 PMF
PEAK OUTFLOW IS 11490. AT TIME 49.50 HOURS

0.4 PMF
PEAK OUTFLOW IS 15245. AT TIME 49.50 HOURS

0.5 PMF
PEAK OUTFLOW IS 19064. AT TIME 49.50 HOURS

0.6 PMF
PEAK OUTFLOW IS 22773. AT TIME 49.50 HOURS

0.7 PMF
PEAK OUTFLOW IS 26455. AT TIME 49.50 HOURS

0.8 PMF
PEAK OUTFLOW IS 30345. AT TIME 49.50 HOURS

PMF
PEAK OUTFLOW IS 38035. AT TIME 49.50 HOURS

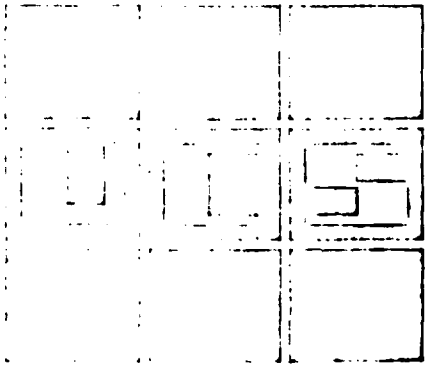
ROUTED OUTFLOWS FROM SCITICO DAM

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIO 1 .10	RATIO 2 .20	RATIO 3 .30	RATIO 4 .40	RATIO 5 .50	RATIO 6 .60	RATIO 7 .70	RATIO 8 .80	RATIO 9 1.00	
HYDROGRAPH AT	SOMERS	60.00 (155.40)	1	3634. (102.90)	7268. (205.81)	10902. (308.71)	14536. (411.62)	18170. (514.52)	21804. (617.42)	25438. (720.33)	29072. (823.23)	36340. (1029.04)	LOCAL RUNOFF TO SOMERSVILLE POND
ROUTED TO	POND	60.00 (155.40)	1	3600. (101.93)	7244. (205.14)	10862. (307.57)	14473. (409.82)	18074. (511.80)	21663. (613.43)	25236. (714.61)	28791. (815.27)	36152. (1023.72)	ROUTED OUTFLOW FROM SOMERSVILLE POND
HYDROGRAPH AT	CITICO	4.00 (10.36)	1	430. (12.16)	859. (24.32)	1289. (36.49)	1718. (48.65)	2148. (60.81)	2577. (72.97)	3007. (85.14)	3436. (97.30)	4295. (121.62)	LOCAL RUNOFF TO SCITICO RESERVOIR
2 COMBINED	TOTAL	64.00 (165.76)	1	3834. (108.58)	7745. (219.30)	11603. (328.57)	15448. (437.43)	19276. (545.84)	23085. (653.69)	26879. (761.13)	30668. (868.43)	38499. (1090.17)	TOTAL INFLOW TO SCITICO RES.
ROUTED TO	SCITIC	64.00 (165.76)	1	3805. (107.75)	7667. (217.11)	11490. (325.36)	15245. (431.69)	19066. (539.89)	22773. (644.87)	26455. (754.79)	30395. (860.69)	38035. (1077.02)	ROUTED OUTFLOW FROM SCITICO RESERVOIR

TEST FLOOD PEAK INFLOW

ROUTED TEST FLOOD OUTFLOW



SUMMARY OF DAM SAFETY ANALYSIS

FLOOD RESULTS AT SOMERSVILLE POND DAM

PLAN 1 ..... INITIAL VALUE | SPILLWAY CREST | TOP OF DAM

ELEVATION	180.00	180.00	183.00
STORAGE	0.	0.	223.
OUTFLOW	0.	0.	1611.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.10	184.06	1.06	363.	3600.	17.50	49.00	0.00
.20	185.16	2.16	551.	7244.	28.50	49.00	0.00
.30	185.73	2.73	679.	10862.	35.50	49.00	0.00
.40	186.40	3.40	824.	14473.	40.00	49.00	0.00
.50	187.03	4.03	986.	18074.	43.50	49.00	0.00
.60	187.64	4.64	1167.	21663.	46.50	49.00	0.00
.70	188.26	5.26	1366.	25236.	49.00	49.00	0.00
.80	188.87	5.87	1585.	28791.	50.50	49.00	0.00
1.00	190.05	7.05	2066.	36152.	54.00	49.00	0.00

TEST FLOOD ELEVATION FOR SOMERSVILLE POND

TEST FLOOD ROUTED OUTFLOW FROM SOMERSVILLE POND

SUMMARY OF DAM SAFETY ANALYSIS

TEST FLOOD RESULTS AT SCITICO DAM

PLAN 1 ..... INITIAL VALUE | SPILLWAY CREST | TOP OF DAM

ELEVATION	138.00	138.00	138.00
STORAGE	51.	51.	51.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.10	144.50	6.50	251.	3805.	150.00	49.50	0.00
.20	148.40	10.40	473.	7667.	150.00	49.50	0.00
.30	151.55	13.55	716.	11490.	150.00	49.50	0.00
.40	154.43	16.43	986.	15245.	150.00	49.50	0.00
.50	156.82	18.82	1274.	19066.	150.00	49.50	0.00
.60	159.00	21.00	1569.	22773.	150.00	49.50	0.00
.70	160.85	22.85	1851.	26655.	150.00	49.50	0.00
.80	162.41	24.31	2093.	30395.	150.00	49.50	0.00
1.00	165.17	27.17	2626.	38035.	150.00	49.50	0.00

TEST FLOOD ELEVATION

TEST FLOOD ROUTED OUTFLOW

FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 24 FEB 79

SCITICO DAM BREACH OUTFLOW TO SECONDARY DAMAGE CENTER

INPUT

```
     1          A         HYDROLOGIC ANALYSIS OF SCITICO DAM
     2          A         NATIONAL DAM SAFETY PROGRAM
     3          A         NEW ENGLAND DIVISION - CORPS OF ENGINEERS
     4          B    300       0      10       0       0       0       0       0      -4       0
     5          J1    5
     6          J     1       1       1
     7          J1    0
     8          Q     1  SCITIC                                       1
     9          K1        ROUTED OUTFLOW FROM SCITICO DAM
    10          Y                                    1       1
    11          Y1    1                                            -138      -1
    12          Y4   138     139     140     142     144     146     148     150     155     160
    13          Y4   165     170
    14          Y5    0      260     645    1824    3351    5159    7210    9478   15981   24466
    15          Y5 37300    54416
    16          KA    0       7      28      77     153     248
    17          KC   115     130     140     150     160     170
    18          KK   138
    19          KD   138
    20          KC    0     .01     .11     .45     1.39    1.38
    21          K     1  HAZARD                                       1
    22          K1        SCITICO DAM BREACH TO HAZARD AREA
    23          Y                                    1       1
    24          Y1    1                                             -1
    25          Y4  0.06    0.03    0.06     103     150    1350     .01
    26          Y7    0     150     200     120     800     100     890     103     940     103
    27          Y7  950     100    1100     120    1300     150
    28          K    99
```

FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79

RUN DATE 03/27/79.
TIME 12.31.53.

HYDROLOGIC ANALYSIS OF SCITICO DAM
NATIONAL DAM SAFETY PROGRAM
NEW ENGLAND DIVISION - CORPS OF ENGINEERS

JOB SPECIFICATION

NO	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
300	0	10	0	0	0	0	0	-4	0

JOPER	NWP	LROPT	ITHACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 1 LRTIO= 1

NO INFLOW → RTIOS= 1.00

HYDROGRAPH ROUTING

ROUTED OUTFLOW FROM SCITICO DAM

ISTAT	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
SCITIC	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTOL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-138.	-1

STAGE	138.00	139.00	140.00	142.00	144.00	146.00	148.00	150.00	155.00	160.00
	165.00	170.00								
FLOW	0.00	228.00	645.00	1824.00	3351.00	5159.00	7210.00	9478.00	15981.00	24466.00
	37300.00	59414.00								

STAGE-DISCHARGE DATA FOR SCITICO DAM

SURFACE AREA=	0.	7.	28.	77.	153.	248.
CAPACITY=	0.	91.	84.	549.	1717.	3703.
ELEVATION=	116.	134.	140.	150.	160.	170.

STAGE-STORAGE DATA FOR SCITICO DAM

SPILLWAY CREST ELEVATION →

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
138.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOP OF DAM ELEVATION →

TOPEL	COOD	EXPD	DAMWID
139.0	0.0	0.0	0.

DAM BREACH DATA

BREACH DATA- FAILURE BEGINS IMMEDIATELY WITH RESERVOIR SURFACE AT SPILLWAY CREST

BRVID	Z	FCRW	TFAIL	WSEL	FAILEL
76.	.01	118.00	.50	138.00	138.00

UNITED COMPUTING SYSTEMS, INC.

BEGIN DAM FAILURE AT 0.00 HOURS

PEAK OUTFLOW IS 2247. AT TIME .22 HOURS

PEAK BREACH DISCHARGE

********** ********** ********** ********** **********

BREACH FLOOD ROUTED TO DAMAGE CENTER

HYDROGRAPH ROUTING

SCITICO DAM BREACH TO HAZARD AREA

	ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
	HAZARD	1	0	0	0	0	1	0	0

ROUTING DATA

	QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
	0.0	0.000	0.00	1	1	0	0		0

	NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
	1	0	0	0.000	0.000	0.000	-1.	0

NORMAL DEPTH CHANNEL ROUTING

	QN(1)	QN(2)	QN(3)	FLNVT	ELMAA	WLNTH	SEL
	.0600	.0300	.0600	104.0	150.0	1350.	.01000

} CHANNEL CHARACTERISTICS AT DOWNSTREAM DAMAGE CENTER

STREAMBED ELEVATION AT SECONDARY DAMAGE CENTER

RUNGE SECTION COORDINATES--STA,ELEV,STA,ELEV,ETC

0.00 150.00 200.00 120.00 880.00 104.00 890.00 103.00 940.00 103.00
950.00 108.00 1100.00 120.00 1300.00 150.00

STORAGE	0.00	4.21	9.18	20.83	45.59	83.47	134.47	198.50	269.08	342.20
	417.84	496.01	576.71	659.93	745.69	833.97	924.79	1018.13	1114.00	1212.40
OUTFLOW	0.00	1150.89	3775.24	8682.65	17422.78	31449.25	52134.34	81057.29	122117.13	170943.21
	227214.53	290727.23	361369.56	438997.42	523622.34	615198.29	713719.76	819195.44	931645.63	1051099.91
STAGE	103.00	105.47	107.95	110.42	112.89	115.37	117.84	120.32	122.79	125.26
	127.74	130.21	132.68	135.16	137.63	140.11	142.58	145.05	147.53	150.00
FLOW	0.00	1150.89	3775.24	8682.65	17422.78	31449.25	52134.34	81057.29	122117.13	170943.21
	227214.53	290727.23	361369.56	438997.42	523622.34	615198.29	713719.76	819195.44	931645.63	1051099.91

MAXIMUM STAGE IS 106.4

ELEVATION OF BREACH FLOODWATERS AT SECONDARY DAMAGE CENTER

SCITICO DAM BREACH
FLOOD RESULTS

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	138.00	138.00	138.00
STORAGE	51.	51.	51.
OUTFLOW	0.	0.	0.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.00	138.00	0.00	51.	2247.	0.00	.22	0.00

← PEAK BREACH OUTFLOW

PLAN 1 STATION HAZARD

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
0.00	2044.	106.4	.17

PEAK BREACH FLOW AT DAMAGE CENTER

APPENDIX E

INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

END

FILMED

9-84

DTIC